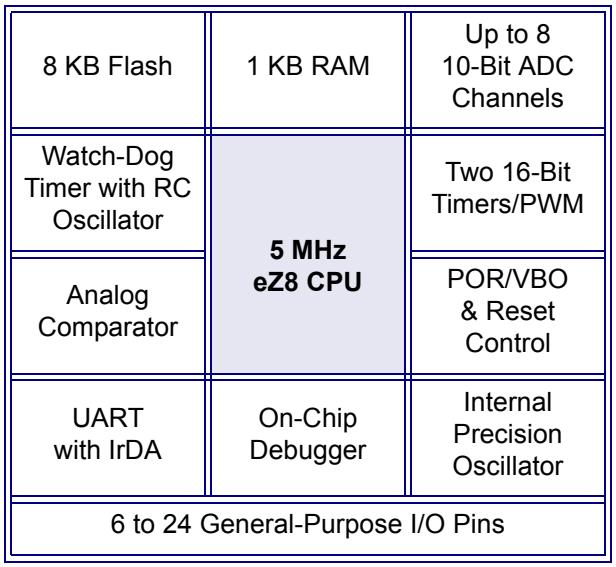
High-Performance 8-Bit Microcontrollers

Z8 Encore!® Z8F0823 Series

Product Brief

PB016505-0106

Product Block Diagram



Overview

The Z8 Encore!® Z8F0823 Series Flash microcontrollers are based on ZiLOG® 8-bit eZ8 CPU core. The Z8 Encore!® Z8F0823 Series of devices sets a new standard of performance and on-chip peripherals.

The Z8 Encore!® Z8F0823 Series supports 8 KB of non-volatile Flash memory and 1 KB on-chip register RAM.

The Z8 Encore!® Z8F0823 Series features up to 8 single-ended channels of 10-bit analog-to-digital conversion.

These devices include two enhanced 16-bit reloadable timers featuring generation of PWM signals, and Capture and Compare capability.

Up to 18 vectored interrupts with 3 levels of programmable priorities, providing increased application flexibility.

The Z8 Encore!® Z8F0823 Series features an on-chip internal precision oscillator (IPO) as a trimmable clock source that requires no external components. The IPO features the output frequency of either 5 MHz or 32 KHz.

The full-duplex UART provides serial communication and IrDA encoding and decoding capability. The UART baud rate generator (BRG) can be configured and used as a basic 16-bit timer.

The new single-pin on chip debugger and programming interface simplifies code development and allows for easy in-circuit programming.

Z8 Encore!® Z8F0823 Series MCU Features

Key features of Z8 Encore!® Z8F0823 Series MCU include:

- 5 MHz eZ8 CPU core
- 8 KB Flash memory with in-circuit programming capability
- 1 KB register RAM
- Up to 8 channels 10-bit analog-to-digital converter (ADC)
- On-Chip Analog Comparator
- Full-duplex 9-bit UART with bus transceiver Driver Enable Control
- The UART baud rate generator (BRG) can be configured and used as a basic 16-bit timer
- Infrared Data Association (IrDA)-compliant infrared encoder/decoders

ZiLOG Worldwide Headquarters • 532 Race Street • San Jose, CA 95126
Telephone: 408.558.8500 • Fax: 408.558.8300 • www.ZiLOG.com

- Two 16-bit timers with capture, compare, and PWM capabilities
- Watch-Dog Timer (WDT) with dedicated internal RC oscillator
- 6 to 24 I/O pins depending upon package
- Direct LED Drive with programmable drive strengths
- Up to 18 interrupts with configurable priority
- On-Chip Debugger
- Voltage Brown-Out Protection (VBO)
- Power-On Reset (POR)
- Internal Precision Oscillator with output frequency of either 5 MHz or 32 KHz
- 2.7 V to 3.6 V operating voltage with 5 V-tolerant inputs
- 8-pin, 20-pin, and 28-pin packages
- 0ºC to +70ºC standard temperature and –40ºC to +105ºC extended temperature operating ranges

eZ8 CPU Features

The eZ8 CPU, ZiLOGs latest 8-bit central processing unit, meets the continuing demand for faster and more code-efficient microcontrollers. The eZ8 CPU features include:

- New instructions for improved performance including BIT, BSWAP, BTJ, CPC, LDC, LDCI, LEA, MULT, and SRL
- New instructions support 12-bit linear addressing of the Register File
- Compatible with existing Z8® code
- Up to 10 MIPS operation
- C-Compiler friendly
- 2 to 9 clock cycles per instruction

Z8 Encore! Z8F0823 Series Development Kit

The Z8 Encore!® Z8F0823 Series uses the Z8 Encore! XP® F08xA Series Development Kit which includes:

Hardware

- Z8 Encore! XP® F08xA Series Development Board
- Smart Cable for PC to Z8 Encore! XP® F08xA Series Development Board (DB9 to 6-pin male, only 20-pin and 28-pin kits)
- USB Smart Cable (included in 8-pin kits only)
- USB Smart Cable available for 20-pin and 28-pin kits as an accessory kit ZUSBSC0100ZAC
- 5 V DC power supply

Software on CD-ROM

- ZDS II–Z8 Encore!® IDE with ANSI C-Compiler
- Sample code
- Document browser
- Acrobat Reader®

Documentation

- Quick Start Guide
- Registration card
- Z8 Encore!® Z8F0823 technical documentation (on CD-ROM)
  - Development Kit User Manual
  - ZDSII IDE User Manual
  - eZ8 CPU User Manual
  - Product Specification
  - Product Brief
  - Application Notes

Architecture

Figure 1 illustrates the Z8 Encore!® Z8F0823 Series block diagram.

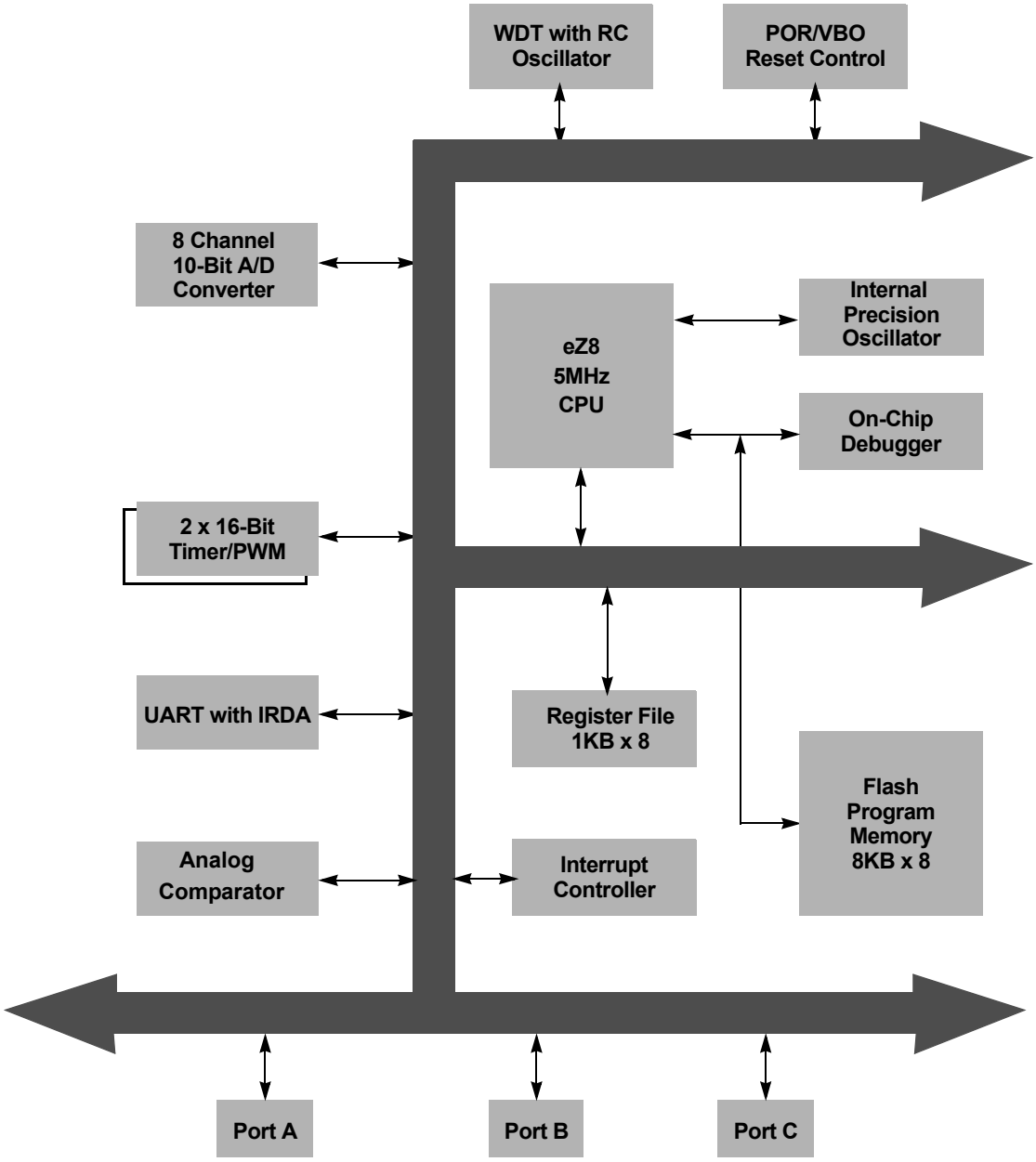


Figure 1. Z8 Encore!® Z8F0823 Block Diagram

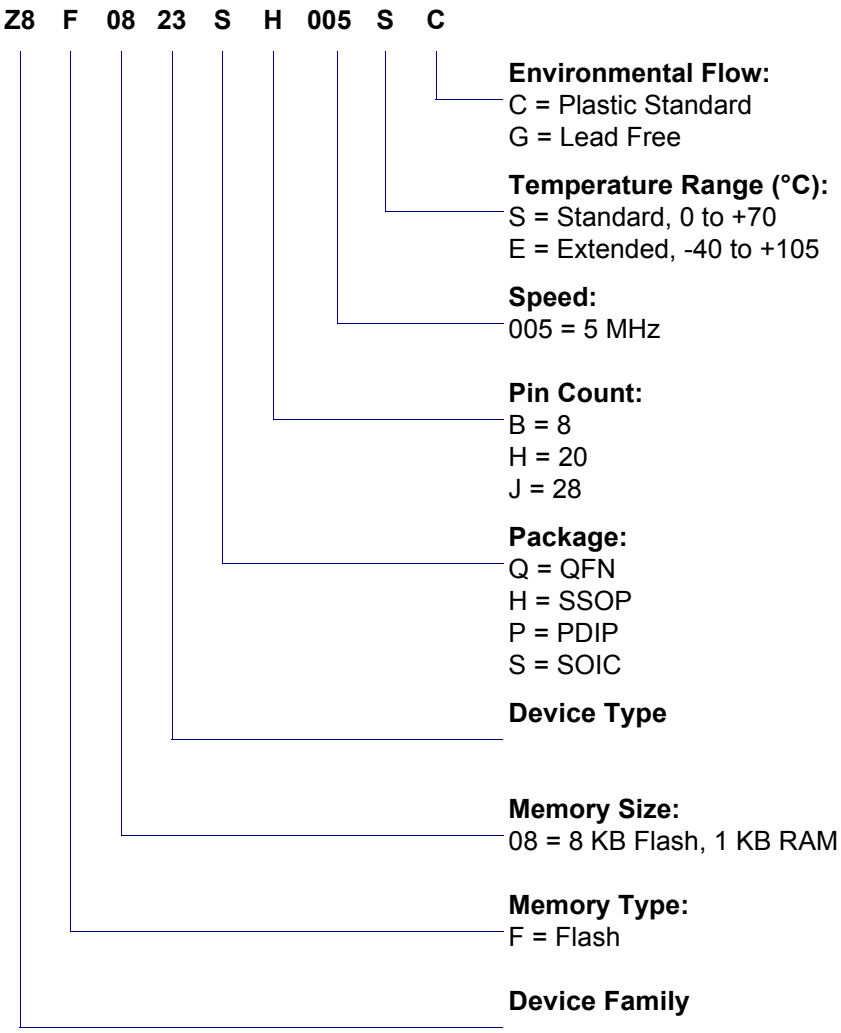
Ordering Information

You can order the Z8 Encore!® Z8F0823 Series from ZiLOG®, referencing the following part numbers. For more information regarding ordering, please consult your local ZiLOG® sales office. The ZiLOG® website www.zilog.com lists all regional offices and provides additional Z8 Encore!® product information.

Part Number	Flash	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	UART with IrDA	Comparator	Description
Z8 Encore!® Z8F0823 Series with 8KB Flash, 10-Bit Analog-to-Digital Converter									
Standard Temperature: 0° to +70°C									
Z8F0823PB005SC	8 KB	1 KB	6	12	2	4	1	1	PDIP 8-pin package
Z8F0823QB005SC	8 KB	1 KB	6	12	2	4	1	1	QFN 8-pin package
Z8F0823SB005SC	8 KB	1 KB	6	12	2	4	1	1	SOIC 8-pin package
Z8F0823SH005SC	8 KB	1 KB	16	18	2	7	1	1	SOIC 20-pin package
Z8F0823HH005SC	8 KB	1 KB	16	18	2	7	1	1	SSOP 20-pin package
Z8F0823PH005SC	8 KB	1 KB	16	18	2	7	1	1	PDIP 20-pin package
Z8F0823SJ005SC	8 KB	1 KB	22	18	2	8	1	1	SOIC 28-pin package
Z8F0823HJ005SC	8 KB	1 KB	22	18	2	8	1	1	SSOP 28-pin package
Z8F0823PJ005SC	8 KB	1 KB	22	18	2	8	1	1	PDIP 28-pin package
Extended Temperature: -40° to +105°C									
Z8F0823PB005EC	8 KB	1 KB	6	12	2	4	1	1	PDIP 8-pin package
Z8F0823QB005EC	8 KB	1 KB	6	12	2	4	1	1	QFN 8-pin package
Z8F0823SB005EC	8 KB	1 KB	6	12	2	4	1	1	SOIC 8-pin package
Z8F0823SH005EC	8 KB	1 KB	16	18	2	7	1	1	SOIC 20-pin package
Z8F0823HH005EC	8 KB	1 KB	16	18	2	7	1	1	SSOP 20-pin package
Z8F0823PH005EC	8 KB	1 KB	16	18	2	7	1	1	PDIP 20-pin package
Z8F0823SJ005EC	8 KB	1 KB	22	18	2	8	1	1	SOIC 28-pin package
Z8F0823HJ005EC	8 KB	1 KB	22	18	2	8	1	1	SSOP 28-pin package
Z8F0823PJ005EC	8 KB	1 KB	22	18	2	8	1	1	PDIP 28-pin package
Replace C with G for Lead-Free Packaging									

Part Number	Flash	RAM	I/O Lines	Interrupts	16-Bit Timers w/PWM	10-Bit A/D Channels	UART with IrDA	Comparator	Description
Z8 Encore!® Z8F0823 MCU with 8KB Flash									
Standard Temperature: 0° to +70°C									
Z8F0813PB005SC	8 KB	1 KB	6	12	2	0	1	1	PDIP 8-pin package
Z8F0813QB005SC	8 KB	1 KB	6	12	2	0	1	1	QFN 8-pin package
Z8F0813SB005SC	8 KB	1 KB	6	12	2	0	1	1	SOIC 8-pin package
Z8F0813SH005SC	8 KB	1 KB	16	18	2	0	1	1	SOIC 20-pin package
Z8F0813HH005SC	8 KB	1 KB	16	18	2	0	1	1	SSOP 20-pin package
Z8F0813PH005SC	8 KB	1 KB	16	18	2	0	1	1	PDIP 20-pin package
Z8F0813SJ005SC	8 KB	1 KB	24	18	2	0	1	1	SOIC 28-pin package
Z8F0813HJ005SC	8 KB	1 KB	24	18	2	0	1	1	SSOP 28-pin package
Z8F0813PJ005SC	8 KB	1 KB	24	18	2	0	1	1	PDIP 28-pin package
Extended Temperature: -40° to +105°C									
Z8F0813PB005EC	8 KB	1 KB	6	12	2	0	1	1	PDIP 8-pin package
Z8F0813QB005EC	8 KB	1 KB	6	12	2	0	1	1	QFN 8-pin package
Z8F0813SB005EC	8 KB	1 KB	6	12	2	0	1	1	SOIC 8-pin package
Z8F0813SH005EC	8 KB	1 KB	16	18	2	0	1	1	SOIC 20-pin package
Z8F0813HH005EC	8 KB	1 KB	16	18	2	0	1	1	SSOP 20-pin package
Z8F0813PH005EC	8 KB	1 KB	16	18	2	0	1	1	PDIP 20-pin package
Z8F0813SJ005EC	8 KB	1 KB	24	18	2	0	1	1	SOIC 28-pin package
Z8F0813HJ005EC	8 KB	1 KB	24	18	2	0	1	1	SSOP 28-pin package
Z8F0813PJ005EC	8 KB	1 KB	24	18	2	0	1	1	PDIP 28-pin package
Replace C with G for Lead-Free Packaging									
Z8F08A28100KIT 20-pin and 28-pin Development Kit									
Z8F04A08100KIT 8-pin Development Kit									
ZUSBSC0100ZAC USB Smart Cable Accessory Kit									

Part Number Suffix Designations



This publication is subject to replacement by a later edition. To determine whether a later edition exists, or to request copies of publications, contact:

ZiLOG Worldwide Headquarters
532 Race Street
San Jose, CA 95126
Telephone: 408.558.8500
Fax: 408.558.8300
www.ZiLOG.com

Document Disclaimer

ZiLOG is a registered trademark of ZiLOG Inc. in the United States and in other countries. All other products and/or service names mentioned herein may be trademarks of the companies with which they are associated.

©2006 by ZiLOG, Inc. All rights reserved. Information in this publication concerning the devices, applications, or technology described is intended to suggest possible uses and may be superseded. ZiLOG, INC. DOES NOT ASSUME LIABILITY FOR OR PROVIDE A REPRESENTATION OF ACCURACY OF THE INFORMATION, DEVICES, OR TECHNOLOGY DESCRIBED IN THIS DOCUMENT. ZiLOG ALSO DOES NOT ASSUME LIABILITY FOR INTELLECTUAL PROPERTY INFRINGEMENT RELATED IN ANY MANNER TO USE OF INFORMATION, DEVICES, OR TECHNOLOGY DESCRIBED HEREIN OR OTHERWISE. Except with the express written approval ZiLOG, use of information, devices, or technology as critical components of life support systems is not authorized. No licenses or other rights are conveyed, implicitly or otherwise, by this document under any intellectual property rights.